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Midwest Engineer

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PROFESSIONAL AND EXTRA CURRICULAR ACTIVITIES — PAGE EIGHT

Vol. 12 APRIL, 1960 No. 9

CHICAGO

This great city has been called the
World's butcher of hogs and its
Maker of tools. It has been called a
Cereal and railroad center, and a
Center for the handling of freight.
It has been called rough, and stormy,
and brawling, and ready—
A heavy, working city.

All this Chicago has been called; but it is also more:

Chicago, for instance, is the home of the Western Society of Engineers.

The developments of recent years hold great promise for the future growth of Chicago as an industrial, commercial, and cultural center.

The Western Society of Engineers must not only grow with the City —but also lead its industrial development.

The degree of our devotion to the growth of the Society is the Key to our success.

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Midwest Engineer

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COVER STORY

Albert P. Boysen, past president of the Western Society of Engineers, and district engineer of the American Bridge Division of United States Steel, Chicago Office, has retired after serving his industry and profession with distinction for nearly half a century. Please turn to page 14 for an article concerning Mr. Boysen.

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Above, R. D. Maxson (left), Western Society of Engineers 1st vice-president and consultant with Sargent & Lundy, talks with Dr. Elliott, Institute of Gas Technology, and William H. Gehl, Jr., Northern Illinois Gas Co.
Above, right, those at the speaker's table enjoy relaxation and their coffee, two of the better things of life.

THE WESTER

William G. Fulton (center row, left), Publications Committee chairman, holds out the valuable Stradivari violin for the fascinated onlookers to see. Bottom, left, David W. Young, the owner, plays a few pieces on the "Mackenzie."

Center row, right, Mr. Young gives his talk. Bottom, right, Franklyn J. Lammers, vice-president, sales, with Wallace Supplies Manufacturing Company, displays the admiration others felt on holding the violin.

PROGRAM:

COFFEE TALK

- A Famous Violin

TECHNICAL SESSIONS

- Changing Patterns of Engines and Fuels
- Role of Gas in Meeting Future Energy Demands

ROCIETY'S FEBRUARY MEETING

A $16,000 Stradivari violin was an impressive feature of the Western Society's General Meeting of Feb. 23, 1960.

David W. Young, research associate with Sinclair Research Laboratories, Inc., Harvey, Ill., owns the violin. During the after-dinner coffee period he spoke on "Antonio Stradivari, Artist and Chemist." He also displayed his famous violin.

The talk detailed the exalted position held by Stradivari in Cremona, Italy, and told of the development there of the finest violin workshop in the world. Cremona was founded by the Romans in 218 B.C., but its place of greatness on earth was due to the violins—the world's best violins—created there. The best of these were made by Antonio Stradivari.

Mr. Young's Stradivari violin, called the "Mackenzie" after a former owner, was made by Antonio Stradivari in 1685. Stradivari was then about 40 years old, and had reached his highest plateau as a master craftsman, his talent evaluated, among other things, by his steady hand and eye.

Also owned and displayed by Mr. Young was a Luport violin, made in Paris, France in 1810. This violin was made by N. Luport who was called the "Stradivari of France" and was acknowledged as the greatest violin maker of that country.

The speaker gave a special demonstration of the thermo-plastic properties of the varnish — fine and clear — on the Stradivari violin. The varnish is the original varnish that Stradivari himself applied in 1685, and has, and undoubtedly will retain, its highly desirable plastic properties.

Mr. Young spoke of the God-given age—about 1645 to 1785—when the finest violins were made. He also spoke of Lorenzo Storioni (died 1810), the last great violin maker, and detailed how the world lost the ability to make or recreate the ultimate in fine violins, those instruments that are now our great heritage. The loss, explained Mr. Young, was due to an unfortunate and excessive increase in production, an attempt to fill a great increase in orders. He likened Cremona to Detroit — unfortunately a superlative violin, unlike an automobile, does not lend itself to mass-production. The final result: quality of the violins deteriorated; the formula for the varnish, unrecorded, was lost, as was the ability to select and match the woods necessary to render a perfect tone.

In his talk, Mr. Young was at pains to point to the progressively shorter work-week, and suggested that now is the time to start the children of America in the study of art, literature, and music. In this way, the "games of Nero in Rome" will not be resorted to to fill the leisure hours.

Mr. Young's talk pointed up a special story about the after-job-hour tolerance that management has for technical men. It also made a plea that Americans work hard to improve "American traditions."

To end his talk Mr. Young played a few selections on his $16,000 violin. Those hearing him agreed that, all in all, he gave a million dollar performance.

Technical Session No. 1

After Mr. Young's talk, the dinner meeting was adjourned to the two simultaneous technical meetings held in the seventh floor auditoriums.

Technical Session Number 1, under the sponsorship of the Chemical and Metallurgical Engineering Section, featured Mr. J. B. Duckworth, co-ordinator of products, Research and Development Department, Standard Oil Company (Indiana). Mr. Duckworth spoke on "The Changing Pattern of Engines and Fuels."

This speaker's activities have centered around petroleum product development, including Air Force service during World War II, on high octane aviation and jet fuels.

The evolution in internal combustion engines has brought about faster and, usually, more efficient forms of transportation. The commercial use of these new and improved engines is predicated upon the general availability of suitable fuels. Mr. Duckworth described and assessed some of the possible future developments.

Mr. Earle G. Benson is chairman of

the Chemical and Metallurgical Section.

Technical Session No. 2

Dr. Martin Anderson Elliott spoke at Technical Session Number 2. This session was sponsored by the Gas, Fuels, and Combustion Section under the chairmanship of William H. Gehl, Jr.

Dr. Elliott, director of the Institute of Gas Technology on the Illinois Institute of Technology Campus in Chicago, talked on "The Role of Gas in Meeting Future Energy Demands."

As was pointed out, gas has played a significant role in helping to meet the almost insatiable demand for energy in the United States. In the future, it was pointed out, the role to be played by gas will depend upon:

—the total demand for energy
—the fraction of that demand likely to be supplied by gas
—the probable availability of natural gas and other fossil fuels for producing supplemental gas, and
—the long-range competitive position of gas as a source of energy.

Paper Work

A giant Milwaukee mail order house has slashed its two biggest costs—paperwork and physical assembly of orders—by an estimated $250,000 a year through automation, *Control Engineering* reports.

ARGONNE ORDERS MOST POTENT POWER SUPPLY

A power supply more potent than the power supply of any other major atom smasher in the United States has been ordered by the Argonne National Laboratory for its Zero Gradient Proton Synchrotron, a huge particle accelerator now under construction at the Laboratory's main site near Lemont, Ill.

The power supply will include a 68-ton steel flywheel, 13 feet in diameter. Spinning at approximately 900 revolutions per minute, this flywheel will store enough kinetic energy to power an express train.

The flywheel will generate electric power in surges of 117 million watts for the 4,000-ton circular magnet of the 12.5 billion-electron-volt Argonne atom smasher. Pulses of 117 million watts of electricity will be delivered to the magnet every four seconds. This is enough power to light 1,170,000 one-hundred-watt bulbs.

Seven hundred million joules of electrical energy from commercial power lines will be required to start the huge flywheel and bring it up to operating speed. Because most of this energy will be stored in the magnet of the atom smasher, it will require only 10 million watts to keep the flywheel running. (One watt equals one joule per second.)

Purpose of the Zero Gradient Proton Synchrotron, to be completed in 1962 at a cost of $29,000,000, will be to fire high energy proton "bullets" at nuclear targets. This will enable scientists to take apart the atom and explore the fundamental nature of energy and matter.

Amps, 11,000; Volts, 12,500

The power supply will produce a maximum current of 11,000 amperes and a maximum voltage of 12,500 volts. It will feed electricity into the magnet in pulses of one second duration, 15 times a minute. The Allis Chalmers Manufacturing Company will build the huge power supply unit which, in its entirety, will weigh 420 tons.

Argonne's electrical wiring system is undergoing extensive modifications to handle the flywheel-generator. These modifications include the erection of a new power substation large enough to accommodate a city of 40,000 people.

A 60 cycle, a.c. wound, rotor motor will turn the huge flywheel, drawing current directly from the new substation. The flywheel will be mounted on a 60-foot steel shaft. Mechanical energy will be stored by the flywheel as it rotates at 899 revolutions per minute.

Every four seconds some of this stored energy will be converted into electrical energy by two a.c. generators, also connected to the flywheel. Current from these generators must be rectified, that is, changed from alternating to direct current. Four large rectifying transformers will be connected to the generators, and these in turn will feed current to 144 mercury arc rectifiers. Then rectifiers will supply the terminals of the magnet directly with large amounts of d.c. power.

The flywheel will slow down slightly, from 899 to 890 revolutions per minute, as energy is drawn off for the magnet.

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Though the loss in speed will be small, approximately 80 per cent of the energy stored by the flywheel will be available for each electric power surge.

At the end of each power pulse the entire rectifier-generator circuit will be reversed to conserve energy stored in the atom smasher magnet. Direct current will flow back into the rectifiers from the magnet, being converted into alternating current. The two a.c. generators will then, in effect, become motors to return most of the stored energy to the flywheel. In this manner, three-quarters of the power originally pulsed into the magnet will be regained for later use.

To feed the Zero Gradient Synchrotron magnet power supply, and to fill other needs of the huge atom smasher, Argonne's electrical transmission system will be quadrupled in capacity. This program will be completed this summer. A 138,000-volt power line will extend from the new substation to the atom smasher site. Argonne's existing 13,000-volt system will continue to serve most of the Laboratory's 3,700-acre area.

Dr. Albert V. Crewe, director of Argonne's Particle Accelerator Division, said that the Zero Gradient Synchrotron atom smasher will require the extremely large power supply to bring its magnetic field to a strength never before achieved in a particle accelerator of its type. The strength will be about 21,500 gauss, which is also the strongest magnetic field that can be attained in iron. (Gauss is the unit of magnetic strength.)

Purpose of Magnetic Field

Purpose of the strong magnetic field will be to guide the proton projectiles as they race at tremendous speeds around the doughnut-shaped magnet racetrack. Once they have attained an energy of 12.5 billion electron volts, the protons will be sent crashing into target atoms. (An electron volt is the energy gained by one electron in falling across one volt potential difference. Since the charge of an electron, its energy is also conveniently measured in electron volts.)

Dr. Roger H. Hildebrand, associate laboratory director for High Energy Physics, explained:

"The Zero Gradient Proton Synchrotron will produce all 30 presently known or anticipated particles. They will be made in large enough numbers so that we can determine their properties with precision. Information gained from such research is vital to understanding more about the basic nature of matter."

The Argonne National Laboratory is one of America's leading atomic energy research and development centers. The Laboratory is operated by the University of Chicago for the U. S. Atomic Energy Commission. Argonne's main site is located 25 miles southwest of downtown Chicago near Lemont, Ill.

Attention: All Members
Subject: Membership Drive

Are there engineers, architects, and designers in your organization who should belong to the Western Society of Engineers?

If so, you would do a great service to yourself and your Society by displaying WSE's new 11 x 15 inch white, blue, and orange poster on your Company Bulletin Board.

The poster carries the simple message: "You will find many advantages in belonging to the Western Society of Engineers," and provides a supply of post cards to be sent in to get information about WSE.

Please request posters from the Western Society of Engineers at 84 E. Randolph street, Chicago 1, or by calling RAndolph 6-1736.

Your Membership Committee

ARF Studies Unusual Materials

A program of research devoted to a study of new and unusual materials for semiconducting and thermoelectric properties has been started by Armour Research Foundation of Illinois Institute of Technology, it was announced in Chicago.

The research is sponsored by American Cyanamid. Initially, the research will involve the study of material fabrication processes and the establishment of reliable measurement techniques.

Chemists from American Cyanamid laboratories and physicists from Armour Research Foundation will be the cooperating teams in the research. Directing the research groups will be Dr. Donald J. Berets, group leader of new product development for American Cyanamid, and Dr. John W. Buttrey, ARF supervisor of solid state physics, and William D. Brennan, research physicist at the Foundation.

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PROFESSIONAL and EXTRA CURRICULAR ACTIVITIES

By Herbert Payne Sedwick
1960 Washington Award Recipient

Mr. Jackson, Dr. Rettaliata and friends:

As a general rule, engineers are notoriously poor writers and poor speakers. Because I am no exception to the rule, I find it difficult to come up with the right words to express my great appreciation for this most cherished of engineering awards.

It is an understatement to say I am amazed at your choice and I am sure that with virtually no effort at all, the Commission could have found a more deserving recipient. I am pleased and deeply grateful that they did not put forth the effort.

Even though I was notified of the award several weeks ago, I still have a feeling of pinch-hitting temporarily for the real winner who will show up any minute now.

Then, too, I feel like a substitute for a very real reason. In looking back over the years, I can recall no major accomplishment that was mine alone—always it was a team job. Therefore, in accepting the award, I must do so on behalf of the many fine associates who have helped me all the way.

It has been traditional at these award dinners for the recipient to deliver a learned address, generally a technical one, and of considerable length. While I am a great admirer of tradition, let me assure you my address will not be learned; the subject will not be very technical—and it will take only about 20 minutes. I think, however, my subject is of interest and concern to technical people and pertinent to the objectives of the Washington Award.

I want to talk about leadership—and about education as it is related to our future supply of leadership. This subject of education concerns most of us these days whether we be engineers, businessmen, professional people, managers or workers. The basic reason for this con-

cern is that we all want to be sure that deficiencies of today are corrected for tomorrow. This concern has been increased by the ingredients or, to use a trade term, the product-mix, of our educational system being under challenge in recent years.

After the end of World War II there was a great hue and cry in this country to correct the shortage of engineers. Soon afterward we saw the proponents of the Liberal Arts curricula advocating greater emphasis upon the well-rounded man. Public interest in technical training waned somewhat.

Then came Sputnik. As a result, the attention of the whole country was again directed toward the shortage of engineers and scientists. This makes me feel a bit like the little old lady who left the U.N. and remarked to a friend, "I am still confused, but on a much higher level."

A Godsend to us

Because of my confusion, I have no intention of getting into the middle of the educational argument, as to which curriculum element of the product-mix is most needed—I might well find myself with either the majority or the minority, depending on the events of the month. But, I think that the argument in itself is a good thing. On this basis alone, Sputnik was a godsend to us. If it did nothing else, it jolted us out of our smug complacency about the adequacy of our technical developments. It has made us again show concern—even though belated—for producing more and better engineers and scientists.

Without taking sides in the debate on relative needs for different specialties in education, I think we can all agree that education has before it today many important jobs. Certainly, one of the greatest in this missile, anti-missile and space age, is the job of training more and better engineers and scientists. I would like to put emphasis on the "more" and "better" requirement.

In the electric and gas utility business where I have spent my entire adult life, let me say that research and engineering have a vital and continuing role. They have brought about obsolescence which in itself is probably one of the most dynamic factors stimulating our American economy — obsolescence not only of equipment but also of theory, practices, and procedures.

In doing the job well of training engineers and scientists, our colleges and universities must constantly bear in mind and train the students to understand the rapidly changing technical complex of industry. How can this best be done?

I have been fortunate in having more than the ordinary layman's contact with college faculty personnel and with the engineering groups having to do with evaluating college curricula. They have jointly been faced with the basic problem of too much ground to be covered in too little time. The resulting compromise has been effective and probably as good as anyone could hope, considering the magnitude of the problem. The one area that I, as a layman, feel needs further exploration by these groups is concerned with the procedure rather than curricula. But it is very important in determining the leadership qualities of the student. I am using the word "leadership" to refer not only to the qualities required to be a leader of men but also to be a leader in development—in creating a fertile environment for progress, if you like.

Nothing, I think, in college life influences the student's leadership qualities in this sense more than the direct personal contacts with individual faculty members.

"Voices in the wilderness"

Some "voices in the wilderness" have been saying the future volume of students, and the future supply and demand of competent faculty material, requires a revision of procedures in college education. They advocate more directed self study and research on courses, outlined by the respective faculty members, with concurrent conferences between the faculty member and relatively small groups of students. Certainly, this creates an opportunity to appraise more soundly and develop "leadership" qualities of individual students. It is also argued there would be opportunity to lower the investment in physical facilities and increase the breadth of coverage of subject matter. This may be, but the phase that interests me most is the opportunity the idea offers of a closer personal relationship between the student and the men and women who have dedicated themselves to education and have been trained in the art of teaching. It should result in a more effective job in this respect. It should permit developing the potentials of individual students better than can be expected in the larger groups of the lecture room.

Speaking of volume of students, I have read that Russia claims to turn out more than a quarter of a million young specialists each year from its 800 institutions of higher learning. The Soviets also claim that since the Communists came to power, their institutions have graduated more than 4,000,000 specialists, of whom more than 1,000,000 were engineers.

If true, this appears to be quantity of the first degree. I wonder, however, about the quality. I wonder, too, if their young people measure up to ours in understanding of current events and social, cultural and civic responsibilities —if they have the individual initiative and originality of thinking.

I see no evidence that Russia, even with the help of this multitude of specialists, has been willing or able to pass on much in the way of scientific or industrial benefits to its people.

This suggests to me that while we most assuredly must find a way of increasing the number of students who wish to become engineers and scientists, we should not do so at the expense of quality, particularly in that portion of the curriculum directed at producing a well-rounded man. Subjecting more

Mr. Sedwick presented this address on February 29 in Chicago at the Furniture Club of America, following the conferment upon him of the Washington Award for 1960.

The Award, administered by the Western Society of Engineers and recognized as possibly the most important in the engineering profession, was presented to Mr. Sedwick

"for leadership and achievement in electric and gas utilities; for true service in educational and humanitarian fields; for developing young engineers"

In previous years the Award has been conferred upon such other distinguished persons as Herbert Hoover, Orville Wright, Daniel Cowan Jackling, Ralph Budd, Wilfred Sykes, Henry Townley Heald, and James R. Killian, Jr.

and more of our young people to scientific instruction may help us keep pace with Russian quantity but it will not, in itself, preserve the quality of our culture. This is an added argument for making every effort to bring about a closer relationship between faculty and students than the large lecture class permits.

Fortunately, there is considerable evidence that the American public is becoming keenly aware of the need for training more and better engineers and scientists. There has been a sharp change in public opinion since Sputnik.

Opinion Research Corporation of Princeton, New Jersey, has done a penetrating public opinion poll on this subject. Pre-Sputnik, the general public felt that our two most important problems were inflation and keeping out of war. But the earth satellites changed that. Post-Sputnik, the biggest segment of the public felt that our two prime concerns were catching the Russians in the defense race and training more and better scientists.

This would seem to point toward greater public recognition and therefore support for our colleges and universities.

Certainly, if more and better engineers and scientists are to be turned out in the years ahead, financial support is essential. One of the main problems ahead for these institutions is financial, and it will be particularly acute for the schools wihtout tax support. Money will be needed in greater amounts to pay for more facilities, for more and better-paid teachers and for more student aid. The only way to meet this problem is through a cooperative effort of business, industry and the general public. All of these groups, along with alumni, will have to give more money. If they are alert to the problem, I think they will meet the essential needs.

Another phase

Now I wish to turn to another phase of leadership. I sincerely believe that we now have in the Chicago area an unusually capable, hard-hitting management leadership in our educational, business, professional and other groups making up our community. But last year only about one-half of the graduates of Chicago high schools went on to full time college. The main reason, presumably, was financial. I am sure, however, that an important secondary reason was lack of leadership effort directed at the problem—a lack, if you please, of telling the story that needs to be told. This is an indictment of all of us. In other words, we have not made our evaluation of higher education sufficiently evident to the young people and their families to sell them on its merits. This is where the need for broad leadership is evident. And this is where our technical societies can make a real contribution. Furthermore, there is no better place to start than right here in the Chicago area.

Our technical societies have interested themselves principally in technical activities. We have among us great talent and great resources of knowledge with which to appraise and help solve community problems. However, we tend to be introverts. It is high time that we take stock of our obligations to society. We must become extroverts to a degree. If we have the training and abilities that we like to claim, we should be able to recognize that we hold the opportunity to shape a considerable proportion of tomorrow's leadership. We are not doing this to the full extent of our capacities.

How we can contribute

How can we contribute the leadership needed to increase the percentage of young people going on to higher education?

First, we should recognize that, in the Chicago area, we have adequate educational facilities and there is not apt to be any shortage in the future.

Second, let us see to it that scholarships for reasonably good scholars do not go begging. Let us help get the scholars and the scholarships together.

Third, let us help sell the market. That we have a market waiting to be sold is dramatically illustrated by the fact I have already mentioned—only about one-half of Chicago's high school graduates are going on to full time college. This market needs comprehensive exploitation and we should recognize there are very well developed techniques for selling that could be used in this field if we are really intent on doing so.

If our efforts produced only a small percentage increase in quantity of qualified students entering college, we would be well rewarded.

As I see it, our technical societies can help provide the leadership needed in such a program. We can accept the challenge and recognize that the job requires us to turn to selling and advertising techniques with which we, as technical people, are not too familiar. We can join in an overall effort and we can make use of the competitive incentive by each society carrying forward an individual supporting program of its own. Perhaps, a jointly sponsored short-term

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program, incorporating good selling techniques and initiated now, would produce sufficient results by next fall to measure the value of undertaking a more comprehensive long-range program.

I am well aware, of course, of the fine work already done in this area by some of our associates and by our societies, such as the individual recruitment of college students, the high school conferences, the science fairs and the like. These are excellent—but, in today's fast-changing world, they are not enough. What I am trying to say is that we are not justified in resting on our present record. We must do more. I am also aware that some of my friends in the educational field will say a vigorous promotional approach might tend to lower the educational standards which they feel are essential. I join them in the determination to protect educational standards—but we will never make the progress needed without recognizing there will be concurrent problems which we must meet and successfully solve. Illustrative of these is how to overcome the simple inertia of a young person to adopting what appears to be a rather difficult course.

Paint a broad picture

When I think of all the exciting things to be done in the engineering field, it seems evident to me that we should easily be able to sell this type of career—and in doing so help paint a broad picture of development for our country.

We senior members of engineering groups can do a service to education and building of leadership by personal participation in our own society's work, particularly in recruitment and development of younger engineers. Contact and opportunity of discussions with other active professional and business people develops the younger engineer's understanding of community and economic problems as nothing else can and we should all help make this sort of supplemental education available to the younger engineers.

We can also familiarize ourselves with the problems of the faculty in our higher educational institutions by personal contact with them. They will welcome this and you will find it rewarding. Also, you will find they have problems of many kinds, including that of laymen like myself trying to give them advice.

I am sure that if you will do these two things, you will find the best way of sharing the talent and knowledge resources of your respective societies in reaching a mutually desirable goal.

Thank you.

Signs Indicate More Electric Railroads

"Many signs" point to an early revival of additional electrification of railroads in North America, L. B. Curtis, Pennsylvania Railroad Co., Philadelphia, said in New York City on Feb. 2.

He made the prediction at a land transportation symposium during the Winter General Meeting of the American Institute of Electrical Engineers in a paper, "Economic Trends Make Railroad Electrification Inevitable."

The following 12 factors, he said, "point to the ultimate reduction in cost of electrification facilities and reduction in the cost of operation of railroads with electrification": A high electric load factor, reduced electric locomotive maintenance, favorable cost of electricity compared with oil, use of commercial frequency electricity, standardization of electrification, conversion of diesel-electrics to electric locomotives, higher speeds, joint use of right-of-way with utility companies, increased sale of air rights (land over covered tracks), use of atomic power to generate electricity, shortage of oil in national emergencies and the competition by foreign manufacturers.

"It is the firm opinion of the writer," he said, "that these factors will not only produce a form of motive power that is more economical to operate and maintain than the present diesel electric system, but will reduce first costs of electrification to a point where they are equal to or below the cost of the additional diesel-electric power required to give equivalent electric service."

This "points to a more and more favorable economic position of electrification compared with other forms of motive power."

Railroad electrification, he said, offers many advantages. These include use of more efficient generation of power generated in large centrally located plants; more traffic economically handled over the same number of tracks; electric locomotives have the highest availability and the least stand-by losses; electric operation is the cleanest and least noisy; there is less terminal congestion and in the higher horsepower ratings, the electric locomotive is the most compact in length.

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ECONOMY OF BRIDGE DESIGN

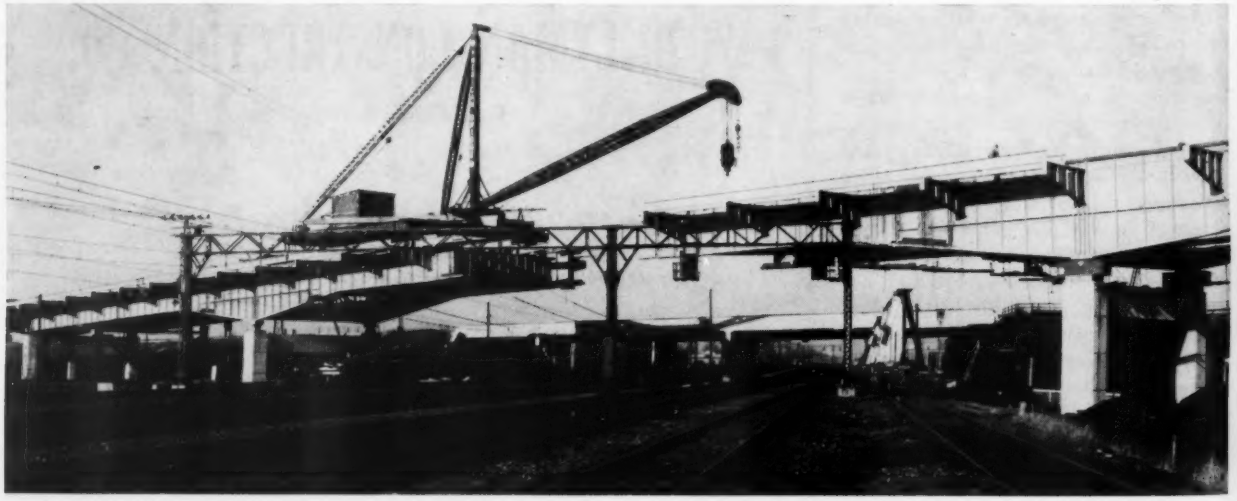
By George C. Harris

This paper was presented by Mr. George C. Harris, bridge engineer, with Alfred Benesch & Associates, Chicago, before the Speaker and Paper Group of the Western Society of Engineers in Chicago.

Bridges have been built and used since primitive man first utilized a fallen tree to cross a stream. The lake dwellers of Switzerland built their homes on timber piles hammered into the lake bed—the beginning of the timber pile and trestle bridge. This was about 4000 B.C. About the same time, inhabitants of that cradle of civilization, Mesopotamia, were building true brick arches with a radial arch ring of wedge-shaped bricks. This form developed over several thousand years in Egypt, Babylon, Greece, Persia, and Rome. When the railroad systems of France, Germany, and Italy were built in the 1830's and '40's this was the type of bridge employed. Truly, this was a tried and true method, although a bulky one.

In the warm jungle climates of India, China, Africa, and South America the vine suspension bridges were developed, and were followed by the transporter type, a rope and a sliding basket (shades of the skyride of 1933).

India was the birthplace of the cantilever bridge. Planks of wood weighted down by abutment stones were corbelled out from the two banks, each plank extending out a little further until a single piece was enough to connect the two projections. We are using that principle



Erecting a 3-span continuous structure, for Chicago's Calumet Skyway Toll Bridge Project, over the Illinois Central tracks. Picture looks north. Contractor, American Bridge Company; A. Benesch & Associates, Section Engineer.

today to cross the Calumet River on the new Calumet Skyway, although we use a different material.

The timber spans and covered bridges were developed to a high point in a bridge over the Rhine at Schaffhausen 1756-1758—a continuous two span truss arch with spans of 171 feet and 193 feet. In 1840 William Howe patented a truss, using timber diagonals with vertical tension rods of iron, and a step to a new material was begun.

The 50 years of railroad development from 1840 to 1890 were dominated by the iron truss bridge. Wrought iron replaced cast iron in the 1850's, but in the 1870's and 1880's railroad bridges were failing at the rate of 25 per year. On the night of December 28, 1879 winds of hurricane force smashed over the River Tay bridge in Scotland dumping it and 75 Sunday travelers into the waters below. Wind pressure, as was the custom, had been neglected in its design. In fact the basis of the main design used was simply to make the height of the Malleable Iron Girders one-eighth of the span. Mr. Thomas Bouch, the engineer, said it simplified the calculations.

From the use of steel and better concepts of mathematical design, we have evolved the continuous beam, continuous girders and trusses, and steel arches. This has resulted in a reduction of dead load, an increase in safety, and a better understanding of the forces involved.

At the present we are engaged in building 41,000 miles of a national highway system. The structures we must consider are principally those of a grade separation type in our heavily populated and traveled areas. These structures will be built by the thousands.

In the early 1930's a similar system was to be built in Germany. Their engineers came to this country, studied the Westchester County System, and went home to build an expanded version of it.

Expressway Systems

We now have built a number of Expressway Systems, so let's look at their structures and add up the score.

Ohio Turnpike: Continuous stringers, simple spans with composite slabs, excellent substructure design with full account taken of temperature stresses.

Indiana Tollroad: Simple spans with composite construction. One section engineer only used continuity.

Calumet Skyway: Simple spans, composite slabs, and variable depth plate girders—also metal piers. The same consultant firm that used continuous structures on the Indiana Toll Road used it here with the same pleasing effect and results.

Illinois Toll Road: Precast, prestressed concrete I-Beams—slightly cheaper than steel but built during a steel delivery crisis.

Detroit-Toledo Expressway: For minor roads over the expressway, continuous concrete bridges (conventional) were used. For expressway bridges, composite slabs and tapered steel girders were used.

That is the situation regarding the dim past and the present, and we must now concern ourselves with the future system. Several new developments are being pressed into service by forward-looking state, county, and municipal engineers.

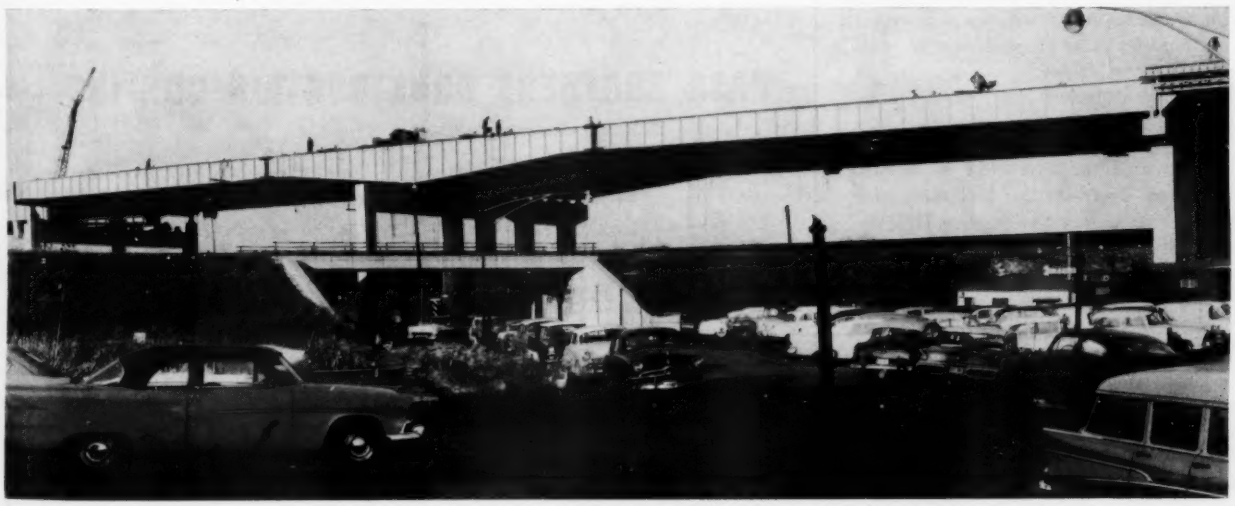
1. Composite construction in steel and concrete: the concrete slab is connected to the steel beams so that it cannot deform independently; it acts as a cover plate of the beams and assists the beams in carrying the loads in the longitudinal direction. This has been evolved since 1926 and was specified in A.A.S.H.O. in 1944. A composite structure is stronger and stiffer than a non-composite structure. This effects a savings in steel, a decrease in beam depth, and an economical use of rolled sections for longer spans. The combination of this with special welded I-Beams having a smaller top flange is in full use in California and Texas.

2. Precast prestressed concrete I-Beams: the economy of this type is partially offset by wider pier caps and heavier dead load reactions.

3. Continuous prestressed concrete girders: one only, just built in California. Two spans of 151 feet each, extend over the Feather River at Marysville. This bridge was completed March 6, 1958.

4. Conventional continuous concrete beam bridges: large dead load.

For bridge types as yet unbuilt in this country I would recommend the orthotrope plate type: a continuous deck plate over stringers, floorbeams, and



A 3-span continuous structure, light and graceful in appearance, for the Calumet Skyway Toll Bridge Project. Picture was taken at 77th street and Anthony avenue. Both this picture and the one at the left were taken on January 9, 1958.

main girders. The plate serves three purposes: it acts as the top flange of main longitudinal plate girders in conjunction with a portion of adjacent stringers, it acts as a load-carrying element between stringers, and it acts as a top flange of floorbeams. The stringers and floorbeams are welded to the underside of the orthotrope plate. The stringers are made up of flat ribs, bulb flats, or inverted tees which stiffen the floorbeams, and, in some bridges, pass through them. A representative example of their weight-saving is the Cologne-Muelheim Bridge. In 1951 it replaced a suspension bridge with a main span of 14,400 tons with one of 6,370 tons. According to Stahlbau, practically all large bridges in Germany are of this type.

One of these bridges is over the Save River in Belgrade. Because of its inherent characteristics of great strength from combining steel girders and cross-stiffened steel plating into one load-carrying structural unit, a distinguished structure was built. It is the world's longest plate-girder span: a three-span continuous structure of 246 feet, 856 feet, and 246 feet supported on two girders 39.7 feet apart. It uses 3,800 tons of steel, and replaces a destroyed suspension bridge of 6,800 tons. It is likely that bridges of this type which can realize such notable savings, and present such a strikingly beautiful appearance, will soon be dominating the long span picture in this country. It is a challenge we must more than meet—we can achieve even greater advances with this type in our rugged country with its great rivers and chasms to be crossed.

Use of Aluminum

For shorter spans I would recommend the use of aluminum. New York State is letting contracts for two aluminum alloy bridges over the Sunrise Highway in Amityville, Long Island. Each bridge will be built like an airplane fuselage in which the outer skin is as essential to the structure as the inner framework. The bridges will consist of hollow triangular beams. The beams will consist of rolled aluminum sheets as thin as one thirty-second of an inch, riveted to long, specially extruded alloy angles. These beams are 7 feet wide at the top and 3½ feet deep, and will be bolted together at the corners, base up, and a bottom cover plate of aluminum sheet will be attached. Each span will be made up of 12 of these beams. The bridges are 212 feet long and 96 feet wide, have 276-foot center spans, and 30-foot end spans. The bridges are designed as composite beams. Shear connectors will enable a reinforced concrete slab to act in conjunction with the aluminum structure to resist live and impact load.

This same state is now building riveted aluminum alloy bridges on the Long Island Expressway. The weight is one-third that of steel, and the cost is 96 cents per pound. The bridges are 120 feet wide, and the span is 79.75 feet. The girders are 4 feet deep, 7 foot on centers, and are connected to a 7-inch concrete slab for composite action.

In closing, the similarities of the new bridge types, both long and short spans, must be apparent to all. We have 41,000 bridges to build under our Federal Highway Interstate Program. This does not take into account the many local city-expressway systems that the new road net will generate. With confidence and faith we must build these new bridges with the most economical and suitable materials possible to use. In the field of design, using the electronic computer and other aids to prepare flexible solutions to crossing problems, we must let alternate designs, so that the contractor can give his most economical bid. The progress that is being made in this field makes certain that this goal will be achieved.

Albert P. Boysen Retires

A veteran of nearly 48 years service with the American Bridge Division of United States Steel Corporation retired on March 31. He is Albert P. Boysen, since 1946, district engineer in American Bridge's Chicago office.

Mr. Boysen, a past president of the Western Society of Engineers, will be honored at a dinner and reception by fellow employees at the Union League Club on April 22. Edward C. Logelin, vice president—Chicago, will act as master of ceremonies at this occasion.

At that time, tribute will be paid Mr. Boysen for his long years of service, not only at U. S. Steel but to the engineering profession and his community.

Mr. Boysen's long and distinguished association with the Western Society of Engineers began in 1937. His active participation in the affairs of the Society and his keen interest in the problems that confront the engineering profession and WSE put him in the light of prominence. As a member of the Board of Direction, he helped to manage and

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guide the Society from 1951 to 1953. From 1953 to 1955 he served as the Second and First vice-presidents and as the President during 1955-56. His administrative ability helped to strengthen the Society's position and broaden its sphere of operations.

While with the American Bridge Division, Mr. Boysen was responsible for the construction of the mightiest steel mills in the nation; he also played a responsible part in the construction of many of this country's most magnificent bridges.

A native Chicagoan, Mr. Boysen was trained at the Chicago Technical college and the Armour Institute of Technology.

He began his employment with American Bridge as a shop clerk in the old Chicago Lassig plant in 1912. He was later transferred to the Division's drafting and engineering departments. Between 1935 and 1946, he was in charge of design for all U. S. Steel buildings in the western area, including that of the structural steel for the Columbia-Geneva steel plant at Geneva, Utah.

In addition to being past president of the Western Society of Engineers, Mr. Boysen is a member of the American Society of Civil Engineers, American Association of Engineers, and the Chicago Engineers Club.

He is a director of the Chicago Regional Planning Association, and a member of the Elmhurst Plan Commission and the Union League Club of Chicago. He is a registered professional engineer in Illinois, Wisconsin, and Florida, and a registered structural engineer in Illinois.

Mr. Boysen resides with his wife, Ella, at 174 Evergreen Ave., Elmhurst. They have two married children, Albert P. Boysen, Jr., and Mrs. Shirley J. Deakin.

Mr. Boysen's retirement plans now call for his summers to be spent at a lake cottage in Wisconsin and the winters in the Florida area.

Depth, Fish Finder

A Massachusetts electronics company has developed a portable depth and fish finder for use by sports fishermen in boats as small as dingies, says *Electronics*. The transistorized fathometer can operate off a portable battery or the battery of a power boat, has a depth range of 120 feet, and will pinpoint both bottom depth and any intervening schools of fish.

U. S. Scores in Missile Contest

Chances that the U.S. will catch up with the Russians in the space and missile race sooner than expected have been materially boosted with the announcement by the United Research Corporation of Menlo Park that it has invented and perfected an economical method of developing and manufacturing solid propellant rocket engines of the largest conceivable size.

According to Herbert R. Lawrence, vice president and director of the Engineering Division, URC has filed for patents on solid propellant rockets of special design which will permit economical development and manufacture of engines with the largest total impulse and thrust now conceivable.

"The concept makes use of what we call power units which are rocket building segments of unique design," Lawrence said. "The more power needed for a particular mission, the greater the number of segments used. But the real beauty of this technological advance lies in the fact that for the first time it makes possible the development of solid rocket engines of the largest magnitude at a fraction of the cost of comparable liquid engines and virtually eliminates the handling and ballistic problems which formally plagued large solid motors," the scientist stated.

Lawrence said that the technical advance which has been under intense investigation for the past year was conceived, developed, and reduced to practice completely on company funds totaling close to a million and a half dollars.

Because of the apparent importance of this invention for large rocket engines, Lawrence said, detailed information on the invention was revealed to government agencies six months ago.

"However, we are going ahead with company plans to build facilities for production of this type of rocket engine as fast as we can proceed," Lawrence added.

URC, a subsidiary of the United Aircraft Corporation, is about to break ground for two multi-million dollar facilities in the San Francisco Bay Area.

Blisterproof Paint

A Canadian paint company has introduced a plastic-based outside paint which cuts application time in half and is more blisterproof than any other type, reports *Purchasing Week*. The acrylic-latex paint has "pores" and "breathes" like the human skin, preventing the build-up of moisture vapor beneath it that usually causes blisters.

Fifth West Suburban Meeting
Western Society of Engineers

In addition to WSE members and their guests, all non-members who are considering membership in the West Suburban Division will be welcome.

PLACE: Remick's Lilac Lodge
Wolf Road and Cermak Road (22nd St)
Hillside, Illinois

DATE: Wednesday, April 20, 1960

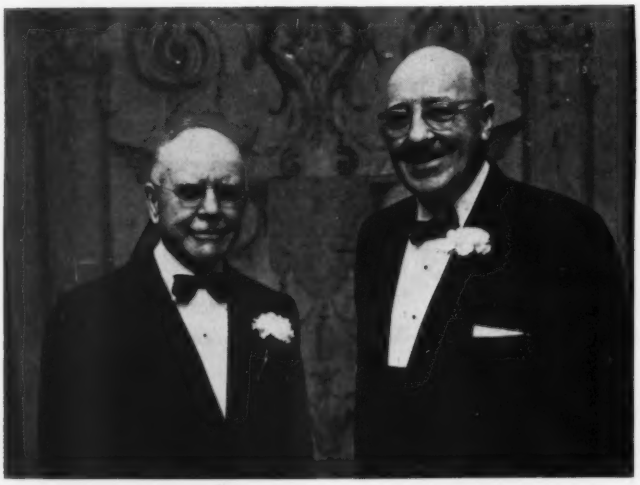
PROGRAM: 6:30-7:30 Dinner—Roast Beef (Tickets: $3.00).

7:40-8:00 Election of Executive Committee Members.

8:15-9:15 Technical Session—"Jet Flying." Speaker: Mr. Mel Volz, United Airlines 1st Officer. Mr. Volz will discuss the details of the new jets and their impact on the transportation industry. Mr. Volz will augment his talk with a thirty minute colored film on United Airline's new DC-8 jet airliner.

For dinner reservations and tickets, call RAndolph 6-1736.

PHOTOGRAPHS TAKEN AT THE 10



E 10 WASHINGTON AWARD DINNER

e Washington Award for 1960, honoring Herbert Payne Sedwick, was held e Furniture Club of America in Chicago on February 29.

e Award, administered by the Western Society of Engineers through the hington Award Commission, is presented most years "for the recognition of ted, unselfish and pre-eminent service in advancing human progress."

e Commission chairman for 1960 is George L. Jackson, a past-president of Western Society of Engineers. Dr. John T. Rettaliata, as president of the rn Society, made the presentation.

Seen in the picture just below at left, and continuing in the picture to the right, are those seated at the Speaker's Table: John G. Hendrickson, Jr. (left), representing ASCE; F. A. Cox, AIEE; Dr. John T. Rettaliata, WSE; Mr. H. P. Sedwick, the Washington Award recipient; George L. Jackson, WSE; Thomas M. Niles, ASCE; Mr. Robert E. Wilson, the recipient of the Award in 1956; E. J. Carraro, ASME; Carl H. Samans, AIMME; and Carl A. Metz, WSE.

Mr. Sedwick is seen in the picture at the top, right, with his wife (third from left) and four daughters.

New Products

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Low Temperature System

Completely self-contained, ready to plug into an electric outlet, a new Low Temperature System, manufactured by Remcor Products Company, provides temperatures to —110°F., or lower, with either wet bath or dry storage. The refrigerated area is liquid tight. Capacities of standard models are from .6 to 6.5 cu. ft. The System can be used for chemical, oil, electronic, industrial, metallurgical, transistor, and other types of processing and testing, in agricultural applications, and by laboratories for scientific testing and development work. Specifications and prices of standard models are available from Remcor Products Company, 321 E. Grand Avenue, Chicago 11, Illinois. Prices also quoted on models for special application.

Sketching Tissue

A lightly-tinted yellow sketching tissue that permits low-cost reproduction is one of the newest product developments of Keuffel & Esser Co.

Designed primarily as a "talking" paper—to make idea sketches and quick roughs—for architects, commercial artists and advertising agencies, the new #185 Sketching Tissue is an inexpensive paper that takes pencil, charcoal, or crayon equally well. It will produce sharp copies in standard diazo, blueprint and office copy machines.

In spite of its light weight (six pounds for 500 sheets, 17 x 22 inches), the K&E tissue is unusually tough. Even with its slight yellow tint, the tissue allows the best reproduction of any paper of its type.

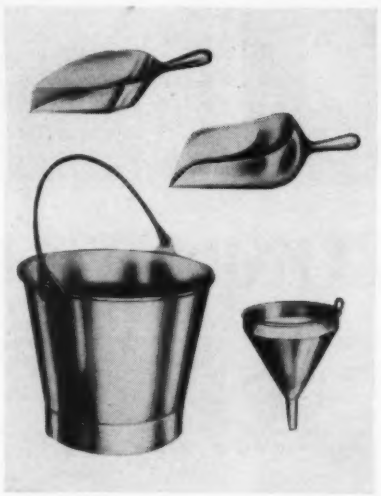
The tissue is available in 50-yard rolls, 42 and 48 inches wide, for easy storage. Narrower widths can be obtained simply by cutting the roll with a hand saw.

For further information, write Keuffel & Esser Co., Adams and Third Streets, Hoboken, New Jersey.

Stainless Steel Pails

A wide range of chemically pure, stainless steel pails, scoops and funnels designed for handling food and chemicals is being marketed by Star Stainless Screw Company, Paterson, N. J. Corrosive resistant to most chemicals and corrosive media, the pails, scoops and funnels will not contaminate food products or chemicals.

The seamless pails with chimes are



available in 5 sizes—from 10 to 20 quarts. The scoops in round and flat bottom styles come in 1 pint to 6 quart sizes. The funnels are available in 1 pint to 2 gallon sizes.

Complete information, prices and a detailed catalog with corrosive resistant tables, available from Star Stainless Screw Company, 655 Union Blvd., Paterson 2, N. J.

Cascade Impactor

Greatly improved collection efficiency and size grading of dust samples are promised in the completely re-designed M-S-A Casella Cascade Impactor, it was announced by Mine Safety Appliances Company.

The Casella Cascade Impactor is a unique instrument employing four jets in series to collect air-borne particulates in the range of one-half micron to 200 microns. Adhesive-coated discs in each jet chamber collect the particles in sizes of decreasing gradings.

In the re-designed instrument, low air velocities are employed to permit collection of large-size dust samples without error. In addition, the jet openings are made in decreasingly smaller sizes, thus increasing the velocity from jet to jet and improving the efficiency of collection at each disc. An optional fifth stage in the form of a filter is provided to collect even smaller particles.

The instrument also features demountable jets to permit easy cleaning, or the use of individual stages for dust sampling where desired. Zinc alloy die castings provide a high degree of dimensional accuracy and reproducibility.

Magnesium Extrusion

A multiple hole, hollow magnesium extrusion produced by White Metal Rolling & Stamping Corp., Brooklyn, N. Y., is now being utilized for large frame members on automatic silk screen printing machinery.

Magnesium's high strength-to-weight ratio and rigidity made it possible to fabricate a light yet rugged frame within specific size limitations. To maintain full

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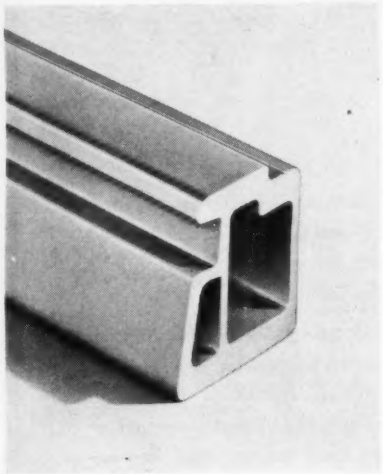
beam strength and stability and add additional stiffness, a center bar was designed into the completed extrusion.

Magnesium's non-scuffing and easy-sliding qualities, in addition to its rigidity and high strength-to-weight ratio, suit it to an increasing variety of applications requiring hollow shape structures. White Metal works closely with engineers of customer companies to design and develop unusual multiple hole



hollow structures for a broad range of specialized purposes, drawing as it can on its experience as one of the world's largest producers of magnesium products.

Additional information, including a new brochure with facts on the properties, uses and practical applications of Whitelight Magnesium is available from White Metal Rolling & Stamping Corp., 92 Moultrie Street, Brooklyn 22, N. Y.

Literature

Epoxy Plastics

A four-page catalog outlines 25 epoxy based plastic products offered by Ren Plastics, Inc., Lansing, Mich., a firm that specializes in epoxy compounding.

The products are adaptable for use in pattern work, contour duplication, drill jigs, Keller models and many other tooling applications where dimensional stability with strong, laminated plastic reinforced fiber glass is required; or they can be used in draw dies, drop hammer dies, stretch blocks where requirements call for strength, impact loads and wear-resistant surface.

Properties of the products are stated with other helpful information in this catalog sheet which can be obtained by writing Ren Plastics, Inc., 5422 S. Cedar Road, Lansing 9, Mich. Ask for Material Description or Specification Data Sheet.

S&C Power Fuses

New power fuse ratings as confirmed by testing at Naamlose Vennootschap tot Keuring van Ekectrotechnische Materialen (KEMA) Laboratories (Arnhem, Netherlands) are listed in "Interrupting Ratings of S&C Power Fuses" just issued by S&C Electric Company. The new bulletin lists interrupting ratings in both amperes (rms asymmetrical) and kva (symmetrical, three-phase) for transmission and distribution systems fuses from 2.4 to 138 kv, and for metalclad switchgear fuses.

Ratings are given with and without mufflers, for indoor and outdoor holders, and for solid-material and liquid fuses. The ratings are based on AIEE specifications.

Data Bulletin 205 may be obtained free upon request to S&C Electric Company, 4435 N. Ravenswood Ave., Chicago 40, Ill.

Plasma Jet Coatings

A comprehensive, six-page illustrated brochure, on plasma jet coatings, metal and ceramic spraying, and other hard facing services for industry has been published by Cleveland Hard Facing, Inc., Cleveland, Ohio.

Complete specifications and typical applications for the various processes are listed in individual sections of the free literature.

Plasma jet coating is considered the most modern method of applying extremely high temperature and density overlays of corrosion and wear resistant metals and ceramics. This process employs an arc-gas device to heat gas to readily controllable temperatures in excess of 30,000° F.

With the use of plasma jet coatings, high purity meals and alloys can be applied. It offers overlay densities to 95% of theoretical, and thicknesses of from a few mills to as much as ½ inch. The metallic coatings have maximum toughness in a wide range of temperatures. This process offers a wide choice of overlay metals and ceramics.

The Metal and Ceramic spraying process is used to apply high melting-point metals and ceramics. Wear, abrasion, heat and corrosion resistance are the outstanding characteristics of this type of sprayed coatings. While they do not have the density or purity of the plasma coatings they do offer high compressive strength, and good tensile strength. Also with this process, porosity of overlays can be controlled to meet specific requirements.

The third process, hard facing, is used where maximum resistance to wear, heat and corrosion is vital. This process is the most economical method of obtaining special surface properties and precision finished surfaces. Hard facing overlays offer excellent resistance to many corrosive acids or alkalies, high compressive strength (up to 256,000 psi), good flat impact and high hot strength. They can be used to reduce manufacturing costs since overlays are applied only at points where they are required.

Further information and copies of the free literature may be obtained from Cleveland Hard Facing, Inc., 3047 Stillson Avenue, Cleveland 5, Ohio.

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IN MEMORIAM

TO

PAST-PRESIDENT

DANIEL JOSEPH BRUMLEY

1865-1959

Daniel Joseph Brumley, a past president of the Western Society of Engineers, passed away on December 6, 1959, at the age of 94. He was born March 19, 1865, near Belmore, Ohio, was graduated from Ohio State University with the degree of Civil Engineer in 1895, and in 1933 received the Honorary Degree of Doctor of Engineering from the same institution.

His 40-year career with the railroad industry began in 1895 with the Louisville and Nashville Railroad, transferring to the Illinois Central in 1904, where he was employed continuously until his retirement at age 70. He progressed successively with the Illinois Central from Principal Assistant Engineer through Engineer of Construction, Engineer Maintenance of Way, Assistant Chief Engineer, Valuation Engineer and Chief Corporate Engineer to Chief Engineer, Chicago Terminal Improvement.

Mr. Brumley maintained an active interest in his profession. In addition to his activities in the Western Society of Engineers, he served as a president of the American Railway Engineering Association which in 1947 conferred on him the high distinction of Honorary Member. He was also a member of several other technical societies, among which were the American Society of Civil Engineers and the American Institute of Electrical Engineers. He also served as president of the Ohio State University Association and the Chicago Engineers' Club.

His standing among his railroad associates is well attested by the fact that after his retirement from the Illinois Central in 1935, he was employed by the American Railway Engineering Association to complete the Association's Manual of Recommended Practices, which is used as a guide for railroads generally throughout the world.

Mr. Brumley accepted leadership in civic affairs. He was active in organizing the Village of Flossmoor in 1925, and the Rich Park District in 1933, and served as a member of the Board and president of each. At the time when there was no local law enforcement agency, he served as Justice of the Peace for Rich Township. In 1927 he became a charter member of the Flossmoor Community Church. He also served as member and president of the Flossmoor School District, as Chairman of the Cook County Relief Committee in 1933, and for the next two years acted as Chairman of the Engineering Division, Illinois Emergency Relief Committee.

Mr. Brumley's main hobby was amateur gardening. He co-authored a book, entitled "Preparation and Care of a Vegetable Garden." He developed the "Brumley Tomato" which was accepted by many of his friends as the ultimate in the tomato field, and was recognized by a nationally known seed company.

Mr. Brumley's sterling character, fidelity to duty, his steadfastness of purpose and willingness to accept and effectually carry responsibility were recognized and admired by his friends and associates. Mrs. Brumley preceded him in death on August 31, 1950. He is survived by a son, David Joseph.

Signed: Verne O. McClurg
Arthur H. Harris
C. H. Mottier

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Est. 1918

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C-7951 (B) STAFF PROCESS ENGR. Chem. Engr. Degree upper 50% of class; 3-5 yrs. exper. process design and/or plant know basic mat'l. & energy calculations. Duties: Work involves wide variety of activities assoc. with process. of mineral deposits & mfgr. of metallurgical coke, canlined petroleum coke & graphite products. Job involves basic mat'l. & energy calculations, eqpt. selection & sizing eqpt. testing in plants & vendors labs., prep. or process specs., economic evaluations, process & product improvement studies & liaison with all levels of company tech. & production personnel. Will be given opportunity to exercise an unusual degree of personal judgment & will rapidly acquire exper. in broad field of activities, 20% travel no car req'd. for a mfgr. of carbon products, filteraids, sal. $8400 loc. Chgo., employer will pay the fee.

C-7953 PLANT SUPT. some courses in metallurgy age to 45; 5+ yrs. exper. as foundry supt. on centrifugal casting pref. Exper. as foreman or supt. of a machine shop, job shop & wkg. with large lathes & boring mills pref. Will report to Division Gen'l. Mgr. Resp. for supv. of foundry-machine shop of abt. 100 maint. supv., shipping foreman, production control supv., purchasing & stores supv., personnel & labor relations asst. Basic resp. to estab. & maintain an effective plant org. & to maintain mutually satisfactory relations with the union. To produce quality non-ferrous & cast iron castings in the most economical manner possible & to machine them to customer specs. To maintain the physical plant. Must be willing to live in small midwestern town, employer will pay the fee.

C-7961 ARCHITECTURE-MECH. ENGR. Grad. ME age 25-57; 5 Yrs. exper. in mech. & air cond., with 2 yrs. supv. resp., know heating, vent., air cond. & plumbing work as applied to bldg. construction. Duties: Prepare drawings & specs., check work with other architects & engrs., supv. bldg. installations & consult with other division personnel relative to above noted mech. & air cond. work involving new bldg., remodeling & improvements for an educational institution loc. Ill. sal. $8/10,000.

C-7962 REGIONAL SALES ENGRG. MANAGER BSME pref. age 30-50; 5 yrs. sales exper., know mech. engrg. trades & construction. Duties: Supv. sales & engrg. activities of group of distributors. Call on architect & engrs. promoting radiant systems. Train distributor salesmen, travel, home week ends, car req'd. for a mfgr. radiant heating & cooling systems sal. $8/12,000 loc. Ill., employer will negotiate the fee.

C-7967 FIELD & OFFICE ENGRS. CE Grad. 0-5 yrs. exper. in subdivision layout-design of general municipal facilities such as sewers, streets, roads, etc. Can use 2 men in office on design & one man in field sal. $6/7800 dep. on exper. loc. S.W. Chgo. Suburb, employer will pay the fee.

C-8013(A) SYSTEMS PLANNING ENGR. BS-MS age 35-45; 10 yrs. exper. know Utility System planning, economics. Duties: Consulting on elect. utility problems in system planning expansion, bulk power facilities & economics associated therewith for a cons. engr. sal. $10/12,000 loc. Chgo., employer will negotiate the fee.

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FOUNDRY METALLURGIST OR ENGR. OR SUPT. BS Chem. 38; Over 9 yrs. exper. in gray iron & steel. This exper. was gained as foreman & metallurgist; Midwest, Ohio, Ind. & Mich. MW: 1076

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Say DDT to Control Malaria in 5 Years

DDT, called "the greatest contribution to the field of insecticides since 1869," is expected to bring malaria, "the world's greatest single cause of disablement" under control within five years, the nation's chemical engineers were informed in Atlanta on Feb. 22. Some 300,000,000 people suffer from the "dreaded disease: and 3,000,000 die from it annually, John G. Plowden, Geigy Agricultural Chemical Corp., a division of Geigy Chemical Corp., said in a history of DDT during an pesticide symposium at the 42nd National Meeting of the American Institute of Chemical Engineers.

Thirty-six of our states were infested by malaria prior to 1945, but in the past 14 years "the United States is considered by the world's malariologists to be free from Malaria," he said.

"Today the United States through its International Cooperation Administration and the United Nations through UNICEF are purchasing DDT in quantities in excess of sixty-five million pounds per year to carry on a partial world-wide malaria eradication. It is expected that during a period of five years of the application of DDT that this dreaded disease can be brought under control."

The consequences of malaria are to be reckoned not only in health, but in terms of its economic and social effects. "It is the world's greatest single cause of disablement; it stunts the physical and mental development of the individual; it hampers the community in its exploitation of natural resources; it reduces agricultural production; and it impairs industry and commerce. Its full economic and social effects have never been computed, but without doubt, it is the world's most expensive disease.

"Can it not then be conservatively stated that if DDT had only controlled the Anopheles Mosquito, the vector of malaria, that the research and expense to develop this chemical would have been justified."

Synthesized in 1873

Although DDT had been synthesized by Othmar Zeidler at the University of Strasbourg in 1873, "it lay buried until 66 years later (1939) when Dr. Paul Mueller and J. H. Geigy, Basle, Switzerland, discovered the extraordinary insecticidal effectiveness of DDT," Mr. Plowden pointed out.

The chemical played a major role in stamping out typhus in Italy during the Second World War, and undoubtedly many Italian civilians and American servicemen owe their life to it, he said. DDT remained a war secret and most of its production was consumed by the government, but after the defeat of Japan it became probably the best known and one of the most effective insecticides. There have been reports that insecticides are building an immunity to the chemical. The World Health Organization is "cognizant of the possibility of resistance developing in the Anopheles Mosquito" but this is not a problem at the present time, except in "small isolated areas," he said.

Mr. Plowden raised the possibility of new insecticides replacing DDT, but said any new chemical would have to be "a world beater to replace it in the market in the near future.

"DDT certainly isn't the final weapon for man to use in his continuing battle against his insect enemies. This has been proven over the years with the appearance of many insecticides which will give better control of certain insects than does DDT. . . ."

Evaluation on the basis of what it has done and what it can do "leads inevitably to the conclusion that the development of DDT was the greatest contribution to the field of insecticides since 1869 when it is recorded that man first began to use poisons to fight his eternal enemies — the enemies that fly, that crawl, that hop; and yet are so small that it is hard for us to believe that some day they may, if we weaken our guard, inherit the earth."

Small Radio-Phono

A Japanese company has designed the smallest radio-phonograph — small enough to be held in one hand—reveals *Product Engineering*. The radio-phonograph weighs 45 ounces and has dimensions of 7½ by 5⅛ by two inches. It uses a micro-motor, seven transistors, two diodes and a thermistor.

Getting the Message

A Chicago consultant in human motivation advises businessmen to solve employee production problems by talking to workers' wives, states *Factory*. If management can convince a wife that the quality of her husband's work contributes to her security, the husband is sure to get the message, he says.

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Reviews of Technical Books

Moon Base

Moon Base, by T. C. Helvey, published by John F. Rider Publisher, Inc., New York 11, N. Y. Pages, 80. Price, $1.95.

This book discusses the technical and psychological aspects surrounding the first U.S. team of human beings—two men and a woman—to be sent to the moon. This is a factual plan and not science fiction.

In the treatment of this important subject, Dr Helvey has attempted to present certain important factors of astronautics, with special reference to lunar base. Technical terms and expressions are used in order to aid the layman to enlarge his vocabulary on specific or unique terms. However, a glossary is provided in the book to familiarize the reader with outer space definitions.

Recognition has been given to the rapid advancement in space technology and the fact that the location of Moon Bases may be nearer than anticipated. Important military implications are described and some areas for strategic application of bases are enumerated.

The manuscript contains two parts, the first part covers "Technical Factors" and discusses Simulation of Altitude and Lunar Environment, Illumination, Gravity, Cosmic Radiation, Meteorites, Atmosphere, Equipment, Physical and Mental Health, and Communication. The second part covers "Human Factors" and describes Single and Dual Parameters, Integrated Environmental Stress on Individual Performance, Recreation in the closed Ecosystem, Medical Parameters, Crew Selection and Training, and Space Psychopharmacology.

W.L.R.

Technical Scientific Communications

Proceedings of the 1959 Institute in Technical and Industrial Communications, edited by Dr. Herman M. Weisman and Dr. Roy C. Nelson. Published by Colorado State University, Fort Collins, Colo. Price, $5.00.

This is a comprehensive reference and text covering practices and theories of scientific and technical communications. It includes presentations by leading professionals in the technical writing field from both the United States and Canada. The material, presented at the week-long CSU institute last summer, is directed particularly to the individual who is concerned with improving communications in a world of expanding knowledge.

Among contributors, in addition to the editors, are Palmer Hoyt, editor and publisher of *The Denver Post;* James W. Perry, director of the Center for Documentation and Communication Research, Western Reserve University; Melville W. Thistle, chief of the public relations office, Canadian National Research Council; C. A. Brown of General Motors Institute; Robert W. Carson, managing editor, *Product Engineering;* Lorin F. Wheelwright, head of Wheelwright Lithographing Company, Salt Lake City, Utah; J. H. McCormick, assistant director of information, USDA Office of Information; Leslie L. Lewis, editorial director of Dartnell Corporation, Chicago; Col. William E. Frame, commander of the Army Signal Corps publication agency; W. F. Carstens, supervisor of the Sandia Corporation's technical information division; H. J. Bulen, editorial research director for *Industrial Marketing* and *Advertising Requirements* magazines, and W. Wesley Ballard, publications manager for Motorola, Inc.

Copies of the proceedings may be obtained by writing to the Institute in Technical and Industrial Communications, Colorado State University, Fort Collins, Colorado.

Engineering Manual

Engineering Manual, prepared by a staff of specialists—editor-in-chief, Robert H. Perry, associate professor, Chemical Engineering, University of Oklahoma. Published by McGraw-Hill Book Company, Inc., New York 36, N.Y. Pages, 680, with 450 illustrations. Price, $9.50.

Engineering Manual contains the most commonly used data and methods in architectural, chemical, civil, electrical, mechanical, and nuclear engineering. It illustrates approved practices and safe procedures for handling all types of engineering assignments. Examples of information included are physical laws involved in the structural design of buildings, table of equilibrium, solubilities of gases in water, explanations of AC and DC, electrical circuits and machines, decriptions of nuclear reactor systems, and many more.

This manual contains the needed facts and practical working instructions to help you solve all types of engineering problems quickly, accurately and completely.

Industrial Packaging

Industrial Packaging, by Walter F. Friedman and Jerome J. Kipnees. Published in 1960 by John Wiley & Sons, Inc., New York 16, N.Y. Pages, 536. Price, $11.50.

Wooden containers are almost out of fashion, but for finely aged and flavored beer or whisky, the wooden barrel still tops them all. Where apples, furniture, machinery, perfume, or trailers are concerned, modern ingenuity must create fancier wraps.

A look through *Industrial Packaging* indicates that every product demands its individualized package. "Our increasingly merchandising-oriented economy demands more and better packaged items," the new book states. The challenge of minimizing costs in every phase of the packaging activity encourages a more fundamental approach to packaging problems.

The authors have set about to give a concise, objective treatment of the subject. Their major emphasis is on the selection of materials, methods, and equipment that will perform the physical distribution function of the industry with the greatest economy.

Blyth Olympic Arena at Squaw Valley, California, designed by Corlett and Spackman, Kitchen and Hunt, architects of San Francisco, was awarded a 1960 First Honor Award of the American Institute of Architects. The arena was the site of the ice hockey and figure skating competitions of the 1960 Winter Olympics.

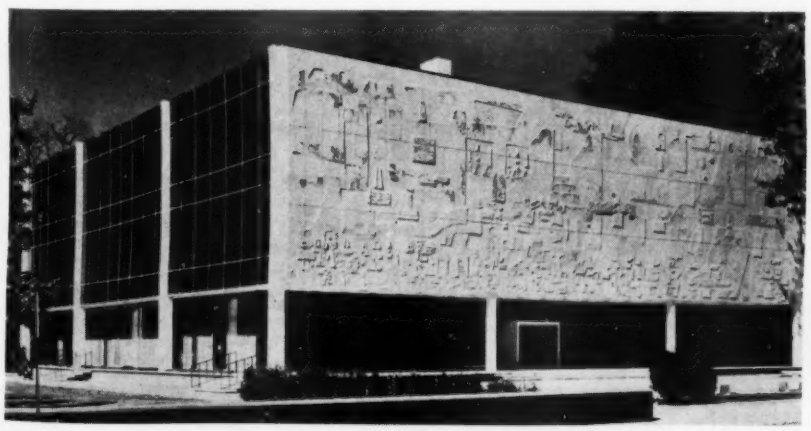
Two of the Best Five

The Blyth Olympic Arena at Squaw Valley, California, and the home office of the Mutual Insurance Company of Hartford are two of the five buildings selected by a jury of outstanding architects to receive the 1960 First Honor Award of the American Institute of Architects.

Site of the 1960 Olympic ice hockey and figure skating competitions, the Blyth Arena was designed by Corlett and Spackman, Kitchen and Hunt, architects of San Francisco. It was named after the late Charles R. Blyth, founder of Blyth & Co., Inc., investment banking firm, who headed a committee of Californians in organizing and financing Squaw Valley for the 1960 Winter Olympics.

Mutual of Hartford President John Alsop asked Sherwood, Mills & Smith, architects of Stamford, Connecticut, for a headquarters that would "make people feel alive." The result is a building "which demonstrates true leadership" in architectural design according to the Institute's jury. A dominant feature of the building is the sculptured facade. The panels are of pre-cast cement and were site-installed by the sculptor, Costantino Nivola, to form the exterior wall.

In its selection from among 289 submissions, the jury felt "that the designs selected represented an outstanding contribution to the cause of good architecture in at least one major aspect."



Mutual Insurance Company of Hartford home office building, designed by Sherwood, Mills and Smith, architects of Stamford, Connecticut, was awarded a 1960 First Honor Award of the American Institute of Architects by a jury of outstanding architects. It was selected from among 289 building designs submitted in the annual competition.

The Only One

An electric automobile, powered by the same kind of solar cells used in space vehicles, was unveiled to scientists attending the American Power Conference in Chicago on Mar. 29.

The man who developed it, Dr. Charles A. Escoffery, Ph.D., technical assistant to the president of International Rectifier Corp., El Segundo, Calif., a leading world producer of solar cells, rectifiers, and other semiconductor devices, was present to drive it and explain it.

The car is a 1912 Baker electric, beautifully restored even to its gleaming patent leather fenders.

Dr. Escoffery explained that the car, reminiscent of the past but prophetic of a vital future power source, is merely for demonstrating solar power conversion.

The Baker is built for a top speed of 20 mph, and its 26 square foot panel of approximately 10,640 silicon cells can produce only enough electricity in eight hours of sunlight to run the car about an hour.

Scientists attending the conference sponsored by Illinois Institute of Technology heard Dr. Escoffery's afternoon talk on "Photovoltaic Conversion of Solar Energy," in which he stressed "an urgent need to develop new sources of energy because of our dwindling fossil fuel reserves (coal, gas, and oil), rapid rise in world population, and the increasing per capita demands for more and still more energy."

The annual rate of consumption of energy multiplied 10 times in the past century, he said, adding it will multiply an estimated 487 times in the coming century.

WSE Applications

In accordance with Article 1, Section 5 of the By-Laws of the Western Society of Engineers, there is published below a list of applicants for admission received since the last issue of the MIDWEST ENGINEER *magazine.*

Lewis A. Mahoney, Field Engineer 'B', Northern Illinois Gas Co., 615 Eastern Ave., Bellwood, Ill.

Donald J. Jahns, Manager, Harrison Electric Construction Co., Inc., 747 Milwaukee Ave.

George H. Parrott, Engineer, Northern Illinois Gas Co., 615 Eastern Ave., Bellwood, Ill.

Albert W. Indeck, Vice President, Wabash Power Equipment Co., 9750 N. Skokie Blvd., Skokie, Ill.

Rudolph A. Ewert, Engineer, Commonwealth Edison Co., 5059 W. Polk St.

Robert R. Digby, Exec. Vice Pres., Roy C. Clark, Inc., 804 East Chicago Ave., East Chicago, Ind.

Ralph A. Barrows, Senior Engineer, Western Electric Co., Hawthorne Sta.

Donald J. Engerer, Engineer 'B', Northern Illinois Gas Co., 615 Eastern Ave., Hawthorne Station.

Paul A. Bihler, Senior Plan'g Engr., Western Electric Co., Inc., Hawthorne Station.

James T. Swallow, Engineer (SQC), Western Electric Co., Inc., Hawthorne Station.

John R. Weigel, Assist. Supt. Dev. Engr., Western Electric Co., Inc., Hawthorne Station.

Lewis W. Melton, Plant Engineer, Western Electric Co., Inc., Hawthorne Station.

Quinlan Halbeisen, Engineer, Western Electric Co., Inc., Merchandise Mart Plaza.

William J. Seal, Department Chief, Western Electric Co., Inc., Hawthorne Station.

Raymond L. Steier, Design Group Suprvr., The Goss Co., Div. of Miehle-Goss-Dexter, Inc., 5601 W. 31st St., Cicero, Ill.

Larry J. Swiston, Engineer Plan'g., Western Electric Co., Hawthorne Sta.

Charles W. Wyman, Senior Staff Engr., Western Electric Co., Inc., Hawthorne Station.

Paul V. Barkley, Dist. Sales Engr., Indiana Steel Products Co., 7-113, Merchandise Mart Plaza.

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Calendar of Chicago Engineering

April 18, Mon., WSE New Members' Dinner. Social Hour, 5:30 p.m.; Dinner, 6:30; Meeting, 7:45. WSE Hq.

April 20, Wed., WSE Noon Luncheon. "How Successful Has the St. Lawrence Been?" 12:00 noon. WSE Hq.

April 20, Wed., West Suburban Meeting. Dinner, 6:30 p.m.; Talk, 7:40; Technical Session, 8:15. Remick's Lilac Lodge, Wolf and Cermak rd. (22nd st.), Hillside, Ill.

April 26, Tues., WSE General Meeting. Social Hour, 5:15; Dinner, 6:30; Technical Sessions, 8:00. WSE Hq.

April 27, Wed., WSE Noon Luncheon. "Urban Redevelopment." 12:00 noon, WSE Hq.

May 4, Wed., WSE Noon Luncheon. "The Role of the Civilian Engineer in the Defense Department." 12:00 noon, WSE Hq.

May 11, Wed., WSE Noon Luncheon. 12:00 noon. WSE Hq.

Fresh Water from Sea is Closer

"Fresh water from the sea is much closer to being economically competitive with water obtained from normal sources of supply than most people realize," was the encouraging prospect held forth on Feb. 15 in a paper at a meeting of the Industrial Minerals Division of the Society of Mining Engineers at AIME.

In so indicating, however, it was made clear by W. Sherman Gillam, of Washington, D. C., chief, Basic Research Division, Office of Saline Water, U. S. Department of the Interior, that while excellent progress has been achieved, "low cost saline water conversion is a problem which to date has not been satisfactorily solved."

The Society of Mining Engineers of AIME, before which the paper was presented, is a constituent part of the American Institute of Mining, Metallurgical, and Petroleum Engineers, now in national convention here, and is the professional organization for engineers and geologists in the minerals industries.

"In 1950, cost estimates for sea water conversion ranged up to $5 per 1,000 gallons," said Gillam. "Improved processes and equipment developed during the subsequent five years reduced that cost to around $2 per 1,000 gallons. At present, additional improvements in certain distillation processes and the development of a freezing process appears to justify a projected cost of about $1 per 1,000 gallons. Anticipated future conversion costs of less than $1 per 1,000 gallons for large installations appear to be reasonable.

"Improved membranes and better equipment have reduced the present cost of demineralizing brackish water by electrodialysis to around $1 or less, depending on total salt content. Future improvements may lower that cost.

"Low cost saline water conversion is a problem which to date has not been satisfactorily solved, although excellent progress is being made. New ideas and new processes are needed and can be achieved only through fundamental research. It is unlikely that the conversion processes presently available for the demonstration plants are the best that can be developed. Further research not only can improve those processes but holds promise of developing entirely new methods which may permit the attainment of a major breakthrough."

Capital Investment

Mr. Gillam pointed out that in figuring the cost of converted water, as offered in his paper, capital investment alone represented about half the total cost of the product water. He continued:

"Care must be exercised to utilize the same yardstick or cost-estimating procedure for any comparison. On that basis, fresh water from the sea is much closer to being economically competitive with water obtained from normal sources of supply than most people realize. For some areas of the world it is already the more economical of the two, and, as conversion costs come down, more and more cities and communities will solve their water problems satisfactorily by tapping this vast, inexhaustible new source of supply."

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News of Engineers

or: Personals of Personable People

Appointment of Edward B. Freyfogle as chief engineer of the A. E. Staley Manufacturing Company has been announced by W. B. Bishop, general superintendent of the company.

Freyfogle succeeds A. W. Neureuther, who resigned to become an engineering consultant after 25 years with the company, 16 years as chief engineer.

Neureuther joined Staley's in 1934 as assistant to the power engineer, held various posts in the structural engineering and standards departments, became head of the mechanical maintenance department in 1940, mechanical superintendent in 1941, and chief engineer in 1944. He plans to study and travel for a time before entering engineering practice as a consultant. A past state president of the Illinois Society of Professional Engineers, he was recently named to a second three-year term on the Illinois Professional Engineers Examining Committee by Gov. William G. Stratton.

Freyfogle received his degree in mechanical engineering from Ohio Northern University, studied at the U. S. Naval Academy and Pennsylvania State College while serving as a Navy officer during World War II, and joined Staley's in 1947 as assistant power engineer.

Recalled to Navy duty in the Korean War, he returned to Staley's as project engineer, was named assistant superintendent of the syrup refinery in 1955, syrup refinery superintendent in 1957, and mānager of process service engineering last spring.

•

Professor William Wilson Morgan of the University of Chicago has been named chairman of the joint department of astronomy of the University of Chicago and the University of Texas.

The announcement was made on March 9, by Chancellor Lawrence A. Kimpton of the University of Chicago and Dr. Logan Wilson, president of the University of Texas.

The two universities have cooperated since 1932 on research in astronomy and last year created a joint department of astronomy to serve both institutions.

Professor Morgan, who discovered the spiral arms of our galaxy, the Milky Way, also was named director of the observatories connected with the two universities.

He will take charge of Yerkes Observatory, operated by the University of Chicago at Williams Bay, Wis., and of McDonald Observatory at Mount Locke in the Davis Mountains of Texas, owned by the University of Texas.

Professor Morgan succeeds Dr. Gerard P. Kuiper who had been chairman and director of the two observatories since 1957. Dr. Kuiper will continue to serve as a professor of astronomy in the joint department until September 1960 when he plans to join the faculty of the University of Arizona.

Also announced were the appointments of Associate Professor Frank Norman Edmonds, Jr., as associate director of McDonald Observatory and Associate Professor Joseph Wyan Chamberlain as associate director of Yerkes Observatory.

•

Four faculty appointments to Northwestern University's Technological Institute have been announced by President J. Roscoe Miller. The four, effective winter quarter, are Ivar Stakgold, associate professor of engineering sciences; Gilbert K. Krulee, associate professor of industrial engineering; Johannes Weertman, associate professor of materials science, and Jerome B. Cohen, assistant professor of materials science.

•

William R. Smith, 44, has been named director of cooperative education at Illinois Institute of Technology, IIT and WSE President **John T. Rettaliata** has announced. His appointment became effective Feb. 1.

For the past four years Smith served as engineering training director for International Harvester Company, Chicago. He had been associated with the company since 1941 in various engineering and administrative positions.

Smith succeeds Raymond D. Meade, who was named director of the Vocational and Adult School at Racine, Wis.

A native of Indiana, Smith received his bachelor's degree in chemical engineering at Purdue University and did graduate work there and at the University of Chicago.

Last year he was general chairman of the Chicago Area Career Conference held annually at Illinois Tech.

He is a member of the board of directors of Made-Rite Manufacturing Co., Chicago, and is affiliated with the Chicago Technical Societies, Illinois Training Directors Association, and the Re-

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serve Officers Association. He was one of the organizers of the Junior Achievement program at Hinsdale Center.

•

E. O. Neubauer, a member of the Western Society of Engineers, retired recently after 49 years service with Illinois Bell Telephone company.

Neubauer began his telephone career as a student repairman in the Oak Park District, and later was switchboard repairman. In 1920 he transferred to the engineering department, transmission division as engineer and was engineering supervisor from 1923 to 1928. In 1928 he was made transmission engineer for the State Area organization.

E. O. Neubauer

As transmission engineer, Neubauer's group grew from 12 people in 1928 to 100 people today. It is considered one of the most outstanding transmission groups in the Bell System.

Neubauer is a member of the Steering Committe of the Bell System Task Force on Transmission. He has always been active in the American Institute of Electrical Engineers and has been a member of the Western Society of Engineers since 1928. He lives at 906 N. 7th, Maywood, Ill.

•

G & W Electric Specialty Company, Blue Island, Ill., has recently made two new appointments. Norman O. Kirkby has been made general manager. He became associated with the company in October, 1957 as Manager of Engineering.

Robert G. Poetsch has become sales manager. He joined Madison Gas and Electric and Standard Electric Time Company after graduating from the University of Wisconsin as an electrical engineer in 1950. Two years later he started as a Sales Engineer with G & W.

•

D. W. Blend has been elected a director and vice-president, operations, of Calumet & Hecla, Inc., it was announced by H. Y. Bassett, president and chief executive officer. Previously, Mr. Blend was vice-president of the company and general manager of the Wolverine Tube Division.

In the newly created post, Mr. Blend will have charge of all company operating facilities including Wolverine Tube Division, non-ferrous tubing and assemblies producer with plants in Michigan and Alabama; Calumet Division; a copper mining operation in Michigan; Uranium Division, with mines in New Mexico; Goodman Lumber Division, with properties in Northern Wisconsin and Michigan's Upper Peninsula; Calumet & Hecla of Canada, Ltd., a nonferrous tube producer and Canada Vulcanizer and Equipment Company, Ltd., manufacturer of vulcanizing equipment and heat exchangers, both located in London, Ontario; and Flexonics, Inc., manufacturer of metal and synthetic hose, fittings and assemblies with plants in Illinois, Michigan, California, and Canada. Alabama Metallurgical Corporation, Selma, Alabama, in which the company has a 70 per cent interest, will be operated separately.

Mr. Blend has been with Calumet & Hecla since its acquisition of Wolverine Tube Company in 1942. He has been with Wolverine Tube since 1932. He is a senior vice-president of the Copper & Brass Research Association and a member of the Engineering Society of Detroit and the Copper Club in New York City.

•

American Potash & Chemical Corporation has transferred Dean L. Browne from its Lindsay Chemical Division in West Chicago, Ill., to the firm's Los Angeles Office, it was announced by J. N. Hinyard, director of Market Development.

Browne, who was formerly Market Development Representative for Lindsay Division, has assumed the same responsibilities in the company's over-all market development program.

•

The Portland Cement Association has announced the appointment of Ivan L. Tyler as research counselor in the Research and Development Division. He has been succeeded as manager of the Field Research Section by Paul Klieger, formerly senior research engineer. Both appointments were effective January 1.

As research counselor, Mr. Tyler will be freed of administrative detail so that his exceptional experience and training in concrete technology may be fully applied to advanced research and counseling.

Mr. Tyler's education included undergraduate and graduate work in civil engineering at Massachusetts Institute of Technology and California Institute of Technology. His broad experience in concrete construction has included positions as hydroelectric construction engineer with Southern California Edison Company, materials engineer in charge of all concrete work for the Tennessee Valley Authority, and chief materials engineer for the Pennsylvania Turnpike Commission.

Mr. Tyler will continue in his capacity as secretary to the Advisory Committee to the Long-Time Study of Cement Performance in Concrete, the largest research project in which the Association is engaged. He will also continue to serve as chairman or member of many committees of such organizations as the American Concrete Intitute and American Society of Testing Materials.

Paul Klieger, new manager of the Field Research Section, is well known

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for his original and useful research in concrete technology. He also is chairman or secretary of several important committees of national societies concerned with cement and concrete science and engineering.

Mr. Klieger is a graduate of the University of Wisconsin. Before coming to the Association as a research engineer, he worked with the Wisconsin State Engineer's Office and with the Department of Mechanics of the University of Wisconsin.

•

Three professorships have been established at Illinois Institute of Technology by IIT's affiliate, Armour Research Foundation. In support of these professorships an annual payment of $75,000 will be made to the Institute by the Foundation.

Announcement of the creation of professorships in the fields of physics, electrical engineering and computer technology was made by Dr. John T. Rettaliata, IIT and WSE president, and Dr. Haldon A. Leedy, director of the Foundation.

Purpose of the grant is twofold, Dr. Leedy explained. First, it will enable Illinois Tech to increase its outstanding faculty, and, second, to encourage industry and other scientific organizations to set up similar professorships.

"There is in America and the free world today a great and immediate need for well educated research scientists and teachers," Dr. Leedy continued. "Armour Research Foundation believes that by establishing endowed chairs in these three fields, it will stimulate graduate study and add to the supply of doctorates in these important areas."

Dr. Rettaliata expressed his appreciation to the Foundation and said that the three professorships will be filled as soon as possible with men having outstanding competence and reputation, and the salaries will be commensurate with this aim. Part of the funds donated by the Foundation will go into an assistance fund to defray costs associated with the professorships.

The appointees will be known as the ARF professors of physics, electrical engineering, and computer technology, Dr. Rettaliata revealed. Their principal duties will be teaching and supervision of graduate research.

Armour Research Foundation was founded on the Illinois Tech campus 23 years ago as an independent, not-for-profit research institution. Its original staff of three persons has grown to one of nearly 1300, and its annual research volume has increased from $40,000 to $15,400,000. Today its research projects are carried on in ten laboratory buildings on the southern half of the Illinois Tech campus.

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The Lindberg Steel Treating Co., Chicago, Ill. announces the following:

George H. Bodeen was appointed general sales manager of all plants. Bodeen, who joined the company in 1952, is also project manager of the company's Rocket and Missile Dept.

Stanley Skozek was elected assistant secretary of the corporation. Skozek joined the company in 1941 and continues as office manager.

Ronald F. Steward has joined the Metallurgical Staff of the Lindberg plant at Melrose Park, Ill. Steward's metallurgical experience includes seven years with the Besser Mfg. Co. and two years with Pontiac Motor Div., General Motors Corp.

Lindberg operates metal heat treating service plants in Melrose Park, Ill.; Rochester, N. Y.; St. Louis, Mo., and Los Angeles, Calif.

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Ferroalloy customers of Chromium Mining and Smelting Corporation will now be served by a new Technical Department headed by a well known metallurgist.

He is Robert T. Howard, who has a broad and varied experience in the smelting, melting, and refining field. He joins the Chromium Mining and Smelting Corporation and subsidiaries as technical director.

Mr. Howard will not only be available to help customers solve metallurgical problems arising from the use of standard and exothermic alloys for steelmaking, but his duties will also include the direction of Corporation technical policies, product improvement and develop-

MIDWEST ENGINEER

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ment, diversification projects, process, and product research.

To these functions, Mr. Howard brings some 20 years of experience in the smelting, melting, and refining fields. He has spent the past 15 years in ferroalloy production and electric furnace operation.

Formerly he was with Vanadium Corporation of America for some 10 years, followed by 3 years as chief metallurgist of Pittsburgh Metallurgical Corporation. Mr. Howard has been acting as technical consultant to the trade for some time prior to his joining Chromium Mining and Smelting Corporation.

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Appointment of Thomas W. Hunter as general manager, operations—steel of United States Steel Corporation, was announced by R. W. Graham, vice-president, operations—steel.

Prior to his appointment, Mr. Hunter had been general superintendent of the Corporation's Gary Steel Works, Gary, Ind., since December, 1957.

A native of Reynoldsville, Pa., he was graduated from Carnegie Institute of Technology in 1932 with a B.S. degree in mechanical engineering. He joined U. S. Steel in 1936 as assistant to the tin house superintendent of the former Shenango Works.

The following year Mr. Hunter was transferred to Irvin Works as assistant to the superintendent of the tin finishing department, subsequently becoming superintendent of flat products at the plant in 1941. He was transferred to Gary Sheet and Tin Mill, Gary, Ind., in 1944, and was tin mill division superintendent at the time of his return to Irvin Works as assistant general superintendent in 1950.

He was made general superintendent of that plant in 1955 and assistant to vice president — operations in April, 1957. Following the latter promotion he moved to Gary Steel Works as general superintendent.

Mr. Hunter is a member of the advisory council to the Board of School Trustees in Gary, and is on the executive boards of the Gary Chamber of Commerce, the United Fund of Gary, and the Northwestern Indiana Crime Commission. He also is a member of the advisory board of St. Mary Mercy hospital, the American Iron and Steel Institute, and the Association of Iron and Steel Engineers.

Noon Luncheon News

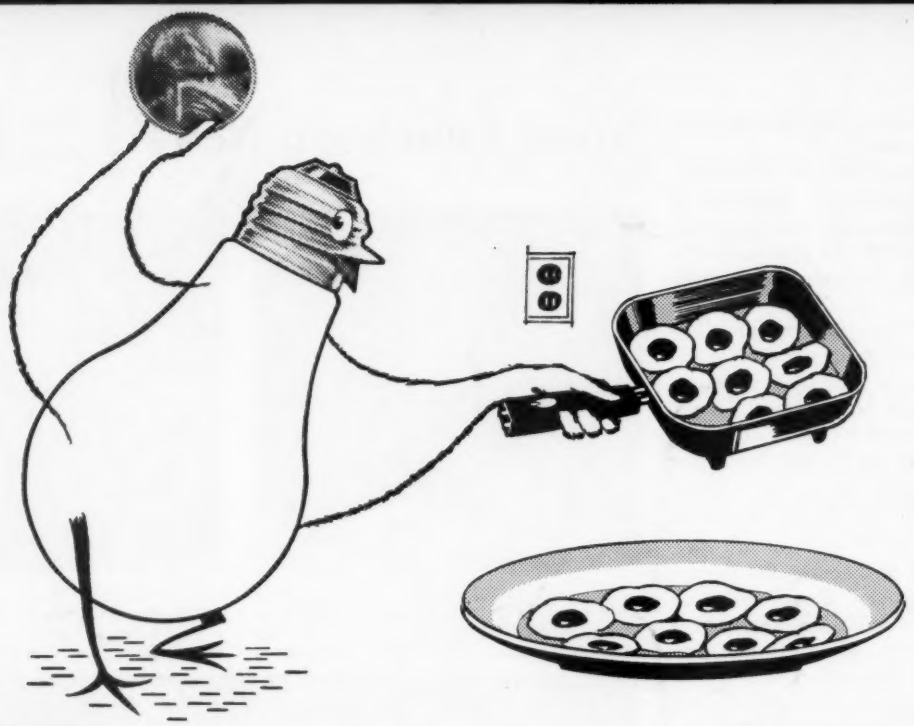
Series II Ends
Series III Begins

On Mar. 3, Mr. Mel Volz, 1st Officer, United Airlines, spoke on "Jet Flying." A B-17 pilot during World War II, he operated his own "dusting" company before joining United.

Lt. Col. James R. Mills, Jr., commanding officer, Chicago Ordnance District, on Mar. 9 showed a film and provided commentary on the missile testing facilities at White Sands, N.M.

Roland Olson, right, affiliated with the Portland Cement Association, spoke Mar. 16 on "Creative Shapes in Concrete." Mr. Olson discussed some of the most recent uses of concrete for shells and curtain walls. He also showed slides of examples of such concrete uses. John P. Donovan, Luncheon chairman, is at the left.

On Mar. 30, inaugurating the Third Series of Noon Luncheon Meetings during the 1959-60 fiscal year, Richard D. Gleason, well-known Chicago management consultant, gave some pointers on how to attain success in the engineering profession. His talk was entitled "Planning Your Future in Engineering." Mr. Gleason, right, and Mr. Donovan discuss the subject over coffee.



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